

## **STRUCTURED RECLOSABLE PACKAGING**

### **BACKGROUND OF THE INVENTION**

**[0001]** This application is related to U.S. Patent Application Serial No. 09/698,009, filed October 26, 2000, entitled "CUTTING AND LAMINATING APPARATUS FOR PRODUCING REINFORCED WEB," and U.S. Patent Application Serial No. 60/410,149, filed September 12, 2002, entitled "FLAT-BOTTOMED RECLOSABLE PACKAGE WITH GUSSETS."

**[0002]** The present invention relates to reclosable packaging with interior support, and manufacturing processes for the same. More specifically, the present invention relates to packaging that may include properties of both a reclosable/resealable bag, but more specifically the characteristics of a structured canister that provides support and protection to the contents of the packaging. The packaging of the present invention may be used to contain foodstuffs in a structured and supported manner that has the outward look and feel of a flexible bag.

**[0003]** Various existing packaging designs provide a reclosable feature that allows the contents of the packaging to be accessed multiple times and closed after each time the packaging is opened. For instance, for the purposes of food packaging, flexible bags and rigid canisters both provide distinct benefits. Bag-like designs offer flexible, lightweight packaging, which can be resealed with a plastic wrapping film or adhesive. Canister-like designs offer a more supportive container, which can be reclosed with a lid that is snapped or screwed into the body of the canister. Other packaging exists that offers some of the advantages of these designs, such as pouch packaging, which is flexible like a bag but can stand upright like a canister.

**[0004]** These existing packaging designs satisfy the basic goal of providing a reclosable enclosure for foodstuffs. However, the designs fail to address certain needs of the modern consumer. For instance, the bag designs offer little if any protection for the contents they enclose. Further, bag packaging generally cannot maintain a predetermined shape or

configuration, nor stand upright. While pouch packaging can usually maintain its upright position, it fails to offer strong protection for its contents. Pouch packaging typically requires more side seals than exist on standard bag packaging, thereby incurring additional time and expense for the manufacturing process of pouch packaging.

**[0005]** Canister designs typically provide more support and protection to their contents than bag designs, but available canisters have a limited number of shapes or configurations and are restricted in the types of reclosable lids they can use. Perhaps even more significant, canister designs require dense materials that are expensive to acquire, manufacture, and transport.

**[0006]** In order to provide a case effective flexible reclosable package that maintains a predetermined shape while offering strong protection for the contents, it is contemplated that improvements are needed before consumers are provided with a plastic bag that meets their needs. These improvements must relate to structured packaging of the present invention that minimizes the materials required for producing each bag and reduces the overall production expenses by decreasing the number of manufacturing steps. Additionally, the present invention provides a reclosable structured packaging that is not limited to the methods of enclosing rigid canisters.

#### SUMMARY OF THE INVENTION

**[0007]** In order to provide cost effective, bag-like rigid packaging and an efficient method for manufacturing the same, the present invention provides flexible packaging with an interior support that is able to contain products such as snacks, confections, pet foods, and liquids. The structured packaging of the present invention provides for a bag that has been appropriately sheared and reinforced. The bag has a supportive structure affixed inside the package that can supply support for the product and provide a method for keeping the package open for easy access or pouring. Additionally, the bag may have a reclosable top portion that encloses the contents of the bag.

**[0008]** The bag of the present invention is preferably formed from a primary web, wherein a reinforcing material is utilized to selectively reinforce portions of the bag. Reinforcing the bag material is particularly useful at sealing points, reclosing points, and other locations on the bag that require additional strength and durability. Because the overall exterior of the packaging is created from a bag sheared of various webs, the manufacturing of the packaging requires fewer steps than known packaging designs. For instance, pouch packages are typically manufactured from webs as well but require multiple side seals, which involve additional manufacturing. The packaging of the present invention can provide an upright bag that requires only a single side seal.

**[0009]** The supportive structure inside the bag may be formed from a variety of materials, such as a flexible film packaging, into a variety of shapes. The support structure is a rigid material that may be manipulated into predetermined shapes and configurations using both known methods and those disclosed herein for manufacturing packaging. For example, the support may be a heat-sealable structure that is manipulated using laser scoring. The support structure in its final state is a relatively rigid body that has been formed into a predetermined shape, such as a box or tube. Alternatively, the support structure may be individual components that, when incorporated into the package, will form the desired structure.

**[0010]** When the supportive structure is appropriately formed, it is affixed to the inside the primary web such that the bag and structure is formed, and the supportive structure is in the lower portion of the bag so that the bag encapsulates the support. The support is generally borne by the bag and fits snugly therein such that the bag fits around the exterior of the support and substantially conforms to the shape and configuration of the support. The support may be heat sealed or sealed via other methods, *i.e.*, pressure sensitive adhesive, spray adhesive, ultrasonic and the like, to the bag to ensure that the support is properly retained therein. The upper portion of the bag may extend beyond the height of the support such that the upper portion of the bag is flexible and has the general characteristics of a bag without such support.

**[0011]** The support structure can either conform to the bag's shape or take a shape distinct from that of the bag. For instance, the packaging may take on a "box-in-a-bag" structure, where the support has a square or rectangular shape and the bag has a round shape, or the bag conforms to the support's rectangular shape. Alternatively, both the support and the bag may have a round shape, where the support is a tube-like structure and the round bag fits around the support. A variety of different shapes is contemplated being used for both the bag and the support structure while keeping within the teaching of the present invention.

**[0012]** In addition to the supportive structure inside the bag, the upper portion of the bag material may constitute either a reclosable or non-reclosable opening. Where the bag is recloseable, the reclosable means may be achieved with a plastic wrapping film, a zipper lock, resealable adhesive strips, easy-snap technology or any number of bag-closing approaches. Any of the existing methods of enclosing bag packaging are applicable.

**[0013]** Accordingly, the present invention provides a cost effective rigid packaging that maintains the versatility and manufacturing benefits of a more flexible bag/package. The structured packaging of the present invention minimizes the materials required for producing each bag and reduces the overall production expenses by decreasing the number of manufacturing steps. Additionally, the present invention provides a reclosable structured packaging that is not limited to the methods of enclosing rigid canisters. Any of the existing methods of enclosing bag packaging are usable with the structured packaging of the present invention. This and other benefits of the dual nature of a structured bag are achieved by the present invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

- [0014]** The present invention will be more fully and completely understood from a reading of the Detailed Description of the Invention in conjunction with the drawings, in which:
- [0015]** Figures 1A and 1B are a top and side view, respectively, of one embodiment of a reclosable package according to the present invention;
- [0016]** Figure 2 is a perspective view of another embodiment of a reclosable package with a supportive structure where the top portion of the package is in a closed position;
- [0017]** Figure 3 is a top view of the reclosable package of Figure 2 with a supportive structure where the top portion of the package is in an opened position; and
- [0018]** Figure 4 is an interior view of a reclosable package with a supportive structure, showing the supportive structure in more detail.
- [0019]** Figure 5 is a first view of an alternative embodiment of the present invention.

## DETAILED DESCRIPTION OF THE INVENTION

**[0020]** As shown in Figures 1A and 1B, a flexible package (bag 1) with a supportive structure 2 built into the package. The supportive structure 2 is appropriately formed and affixed to the lower portion 4 of bag 1 such that the bag encapsulates the support as shown. Preferably, the support for the supportive structure 2 is generally borne by the bag 1, and the supportive structure 2 fits snugly therein such that the bag 1 fits around the exterior of the supportive structure 2 and substantially conforms to the shape and configuration of the supportive structure 2. The supportive structure 2 may be heat sealed, or the like, to bag 1 to ensure that supportive structure 2 is properly retained therein. The upper portion 6 of bag 1 may extend beyond the height of the support 2 such that the upper portion 6 of bag 1 is flexible and has the general characteristics of a bag without a support. For instance, the support may be 3½ inches in height, while the bag may extend upward

beyond the top of the support an additional 4½ inches. The lower portion of bag 1 is shaped into a structured form that may give the packaging the ability to stand upright and protect its contents. The lower portion 4 of bag 1 may have any practical shape, such as square or rectangular, that provides stability and balance to the packaging. The upper portion 6 of bag 1 maintains bag-like characteristics and is not given the same structured form as lower portion 4. This configuration offers more protection to the contents of the packaging than a regular unstructured bag.

**[0021]** The upper portion 6 of bag 1 may constitute either a reclosable or non-reclosable opening. Where the bag is recloseable, the reclosable means may be achieved with a plastic wrapping film, a zipper lock, resealable adhesive strips, or any number of bag-closing approaches. For example, as shown in Figure 1A and 1B, easy-snap technology 8 is used as a reclosable feature. The easy-snap technology is disclosed in U.S. Patent Nos. 6,350,057, 5,983,594, 5,944,425, 5,937,615, 5,928,749 and 4,679,693, all to *Forman*, and is incorporated herein by reference. As described herein, the reclosable portion of the bag may be created by selectively reinforcing parts of the main bag web with sheared reinforcing strips 18 that are laminated to the main bag web, as discussed in more detail below. See, Figure 5.

**[0022]** The supportive structure can either conform to the bag's shape or take a shape distinct from that of the bag. For example, the packaging may take on a "box-in-a-bag" structure, where the support has a square or rectangular shape and the bag has a round shape or conforms to the support's rectangular shape. See Figures 2-4. As shown, bag 15 has a supportive structure 26 that has a square or rectangular shape, may be manufactured by scoring the supportive material at the fold locations. Various scoring methods will achieve the appropriate folds, including the laser scoring as previously described.

**[0023]** Alternatively, as shown in Figure 5, both the support 18 and bag 19 may have a round shape, where support 18 is a tube-like structure and rounded bag 19 fits around

support 18. A variety of different shapes are contemplated being used for both the bag and the support while keeping within the teaching of the present invention.

**[0024]** The supportive structure of the present invention inside the bag can be formed from a variety of materials, such as a flexible film packaging, into a variety of shapes. The support is a rigid material (relative to the primary web material) that can be manipulated into predetermined shapes and configurations by using both known methods and those disclosed herein for manufacturing packaging. For instance, the support may be a heat-sealable structure that is manipulated using laser scoring. The support, in its final state, is a relatively rigid body that has been formed into a desired shape such as a box, as shown in Figures 2-4 or tube.

**[0025]** Alternatively, the rigid body may be comprised of specific components that are configured to form the desired structure when incorporated into the bag. For instance, the rigid body may comprise two components that are fixedly attached to the bag: a first component that supports the left side of the bag and the portions of the front and back of the bag that are adjacent to the left side, and a second component that supports the right side of the bag and the portions of the front and back of the bag that are adjacent to the right side.

**[0026]** During assembly, the present invention as shown in Figures 1-5, may be formed from a primary web, and support structure/reinforcing material is utilized to selectively reinforce portions of the bag. Reinforcing the bag material is particularly beneficial at sealing points, reclosing points, or any other locations on the bag that require additional strength and durability. One method of providing the desired support or structure includes using a primary web handling system and a secondary web handling system, a cross web shear, a strip handling system and a laminating device. The primary web handling system handles the main web of packaging material, or primary web, which will be reinforced, via the secondary web handling system for later operations.

**[0027]** In order to provide the supportive structure/reinforcement, strips may be produced from a secondary web and then laminated to the primary web. Specifically, the

secondary supply web may be fed by the secondary web handling system and provides reinforcing material to the cross web shear, which cuts the secondary web into reinforcing strips of selectable predefined width. Subsequently, the laminating device is then utilized to attach the reinforcing strip to the primary web at appropriate locations. More detail on the laminating process may be found in related application U.S. Serial No. 09/698,009, filed October 26, 2000, entitled "CUTTING AND LAMINATING APPARATUS FOR PRODUCING REINFORCED WEB", which is incorporated herein by reference.

**[0028]** It is contemplated, to appropriately reinforce the primary web, the reinforcing strip/support structure can be relatively narrow and small compared to the primary web, and precisely positioned relative to the primary web. Lamination of the reinforcing strip to the primary web in the desired location is then easily accomplished. While the use of the above-described system is one way of efficiently reinforcing or providing structure to a package, other methods are also possible. For example, a pre-dimensioned reinforcing tape, pressure sensitive adhesive, spray adhesive, or ultrasonic adhesive may be used. Alternatively, the primary web material may be overlapped to provide multiple layers at the desired location.

**[0029]** After the appropriate portions of the primary web have been reinforced, the web is sheared, if necessary, and then the bag is formed therefrom with, for example, a top seal, a bottom seal and a length-wise seal, as shown in Figures 1-5. Referring to Figures 2-4, the bottom of the bag 15 may be gusseted 20 to form a flat surface 22 that causes the package to stand up. The bottom seal 24 is made by first folding the sides 26 of bag 15 towards the center thereof. While the sides are being held in place, the end of the bag is sealed to form a flat, square shaped surface that causes the packaging to stand upright. Another seal 28 may be formed length-wise along one side of the package to form the sides of the pack, defining the interior volume of the bag. More detail on a flat-bottomed stand up package may be found in Provisional Application Serial No. 60/410,149, filed September 12, 2002, entitled "FLAT-BOTTOMED RECLOSABLE PACKAGE WITH GUSSETS", which is incorporated herein by reference.



**[0030]** The top of the bag may be sealed in a manner consistent with existing vertical form fill and seal technology (VFFS) and horizontal form fill and seal technology (HFFS). For example, in an VFFS environment, a flat, full-length seal across the width of the top of the bag is made. Since there are no gussets in the top seal, the addition of a reclosable feature is possible where the bag material is reinforced. The reclosable feature of the present invention may be achieved with any conventional re-closing mechanism, such as a zipper, zipper-slider seal, easy-snap technology, or adhesive strips.

**[0031]** A mechanical module, laser module, or the like may be used for scoring or perforating the reinforcing strips and support structure. The module can also be used to cut, slit, or mark selected portions of the support or the primary web used to form the bag. The module can be easily integrated into a packaging machine used to manufacture the present invention. More detail on laser scoring and perforating may be found in related application Serial No. 09/698,009, filed October 26, 2000, entitled "CUTTING AND LAMINATING APPARATUS FOR PRODUCING REINFORCED WEB", as stated above.

**[0032]** Those skilled in the art will further appreciate that the present invention may be embodied in other specific forms without departing from the spirit or central attributes thereof. In that the foregoing description of the present invention discloses only exemplary embodiments thereof, it is to be understood that other variations are contemplated as being within the scope of the present invention. Accordingly, the present invention is not limited in the particular embodiments which have been described in detail therein. Rather, reference should be made to the appended claims as indicative of the scope and content of the present invention.